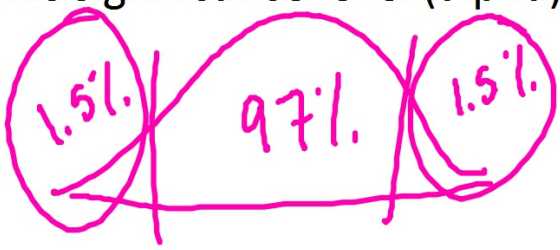
WARM UP:

1) A researcher creates a 94% confidence interval in order to make a conclusion about the hypotheses Ho: $\mu = 20$ and Ha: $\mu < 20$. What would his significance level (alpha) be for that test?

$\alpha = 0.03$

2) A researcher creates a 97% confidence interval in order to make a conclusion about the hypotheses Ho: $\mu = 82$ and Ha: $\mu \neq 82$. What would his significance level (alpha) be for that test?



$\alpha = 0.03$

3) A researcher completes a test of significance for means and finds a test statistic of t = 2.13. His sample size was 23, and his hypotheses were Ho: $\mu = 3$ and Ha: $\mu > 3$. What would his p-value be for this test?

$P(t > 2.13) = tcdf(LB, UB, df)$

$tcdf(2.13, \epsilon 99, 22) = 0.0223$

4) A researcher completes a test of significance for means and finds a test statistic of t = 2.94. His sample size was 38, and his hypotheses were Ho: $\mu = 10.5$ and Ha: $\mu \neq 10.5$. What would his p-value be for this test?

$2 \cdot P(t > 2.94) =$

$2 \cdot tcdf(2.94, \epsilon 99, 37) = 0.0056$

0.0028

5) I create a confidence interval and find (23.1, 34.5)

(a) What is my sample mean? $\bar{x} = 28.8$

(b) What is my margin of error? $m = 5.7$

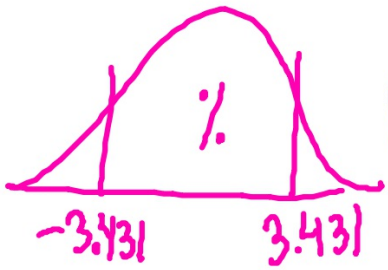
(c) The standard deviation is 9.1 and the sample size is 30.
What is my confidence level?

T-Interval

$m = t^* s/\sqrt{n}$

$5.7 = t^* (9.1/\sqrt{30})$

$t^* = 3.431$



$P(-3.431 < t < 3.431) =$ tcdf(LB, UB, df)

99.82%

6) A researcher completes a test of significance for Ho: $\mu = 93$ and Ha: $\mu > 93$ using $\alpha = 0.06$. He ends up rejecting Ho, and wants to complete a matching confidence interval to find the true mean value. What level of confidence should he use?

7) A researcher completes a test of significance for Ho: $\mu = 18$ and Ha: $\mu \neq 18$ using $\alpha = 0.08$. He ends up rejecting Ho, and wants to complete a matching confidence interval to find the true mean value. What level of confidence should he use?

8) A researcher completes a test of significance using a level of significance (α) of 0.07 and a sample size of 200. If he changed his significance level to 0.10, what would happen to Type I error, Type II error, and Power? (increase, decrease, same)

Type I ↑ (α) Type II ↓ Power ↑ (reject H_0, correct)

9) A researcher completes a test of significance using a level of significance (α) of 0.05 and a sample size of 120. If he changed his sample size to 60, what would happen to Type I error, Type II error, and Power? (increase, decrease, same)

Type I (same) Type II ↑ Power ↓

10) A researcher completes a test of significance using a level of significance (α) of 0.10 and a sample size of 80. If he changed his significance level to 0.05, what would happen to Type I error, Type II error, and Power? (increase, decrease, same)

11) A researcher completes a test of significance using a level of significance (α) of 0.03 and a sample size of 250. If he changed his sample size to 500, what would happen to Type I error, Type II error, and Power? (increase, decrease, same)

same